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ABSTRACT

It is possible to examine the development of English wh-questions in first and second language learners and to detect regularities in the order of emergence of certain linguistic structures. It is also possible to speculate whether the stages in language acquisition correspond to the transformational derivation in transformational grammar. The English-speaking author reports here on the English-language development of his two Norwegian-speaking children as seen in wh-questions. Particular difficulties are noted and discussed. Examining these processes points out the need for a more comprehensive language-learning theory which considers general cognitive factors along with linguistic mechanisms. Tables demonstrating wh-capability and development are included along with a bibliography. (VM)

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The Development of Wh-Questions in First and Second Language-Learners. [1]

Roar Ravem

Roger Brown (1968) [2] reports the result of an analysis of Wh-questions in the speech of the three children whose language development has been studied by him and his associates at Harvard University [3]. The analysis was made to determine whether or not there was evidence in the spontaneous speech of preschool children that the transformational rules of current generative-transformational grammar also figure in the child's competence, in other words, if the intermediate hypothetical strings in a transformational analysis correspond to stages in the child's development of Wh-questions. Such hypothetical intermediates are not, usually, actualized in adult forms and hence not available to the child for imitation. If they occurred in the speech of children at a certain stage of development, it would suggest that transformational grammar has managed to capture psychologically real operations, and it would throw further doubt on an empiricist explanation of language acquisition,

[1] I am indebted to my supervisor, Dr. Terence Moore at the Language Centre, University of Essex, for critical comments and advice on this paper. He is, however, not responsible for the views expressed and my possible misinterpretation of Professor Brown's views, for which I apologize.

[2] See also R. Brown et al. (1969) and Ursula Bellugi (1965).

[3] The team has included also Ursula Bellugi, Colin Fraser, Dan Slobin, Jean Berko Gleason, and David McNeill.

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since these intermediate structures are not examplified in the language data the child is exposed to.

The Grammar of Wh-Questions

Table 1 presents examples of types of sentences that I shall be concerned with in this report, here given in their adult form.

TABLE 1

When will John come?
What was Mary saying?
Where has he gone?
How do you like it?
Why did John leave?
Who did Mary see?
Who saw John?

In the current transformation analysis the sentences in Table 1 are derived transformationally from a final derived phrase marker (a terminal string of symbols derived by phrase structure rules). The leftmost symbol will be an abstract interrogative morpheme (Q), followed by the subject noun phrase (NP) and the verb phrase (VP). Each of these major constituents will dominate a hierarchy of minor constituents. Thus the VP will contain an AUX, which contains tense (T) and a verbal auxiliary constituent. It will further include to the right of AUX a main verb (V) and an NP when the sentence requires a direct object. If the sentence requires an adverbial (ADV), this will be generated to the right of the VP. The constituent to be questioned, either the subject NP or the object NP or the Adv, will have associated with it an abstract dummy element (WH) [4]. Before lexical insertion, a simplified underlying string for a sentence like

When will John read the book?

[4] The constituent itself dominates indefinite elements, such as: 'some thing', 'at some place'. For a treatment of questions, see J. J. Katz & P. M. Postal (1964), pp. 79-117.

would look like this:

Q NP AUX V NP WH-ADV(time)

For convenience we will render it as:

Q John will read the book WHEN

In this example the constituent ADV has been questioned. If an NP is questioned, we get either Q John will read WHAT or Q WHO will read the book.

To derive the normal question, two transformations are required (disregarding the transformation that deletes Q), namely, (1) a "preposing transformation", which moves the constituent with the WH-feature to a front position (this transformation applies vacuously when it is the subject NP that contains the WH-feature), and (2) a "transposing transformation", which moves (the first element of) the auxiliary in front of the subject NP. Q John will read WHAT will by (1) be changed into

WHAT John will read?

and further by (2) into

WHAT will John read?

If morpho-phonemic rules were applied to the underlying non-transformed strings, sentences like the following would result:

John will read what?

John will read the book when?

Who will read the book?

If we assume that the stages in language acquisition mirror the transformational derivation in transformational grammar, we would expect to find sentences in the child's grammar that are basically of this form. I shall therefore refer to it as the first Hypothetical Intermediate (H.I.1).

It should be noted, however , that the H.I.1 is not identical with Brown's "Occasional Question" (1968, p. 279). In Brown's treatment the Wh-word is spoken with heavy stress and rising intonation. He gives the following example. "If someone said: 'John will read the telephone book' one might

respond 'John will read what?' ". This would not in my analysis constitute an example of H.I.1. As a question it is semantically different from a normal question in that the constituent that is questioned is already known and the question expresses a disbelief or astonishment[5]. The sentence we would expect to find, if our assumption were correct, would be one with normal interrogative stress and intonation.

The next stage of development would be one in which morpho-phonemic rules were applied to an underlying string after preposing, but in the absence of transposing. This would result in sentences like:

What John will read?

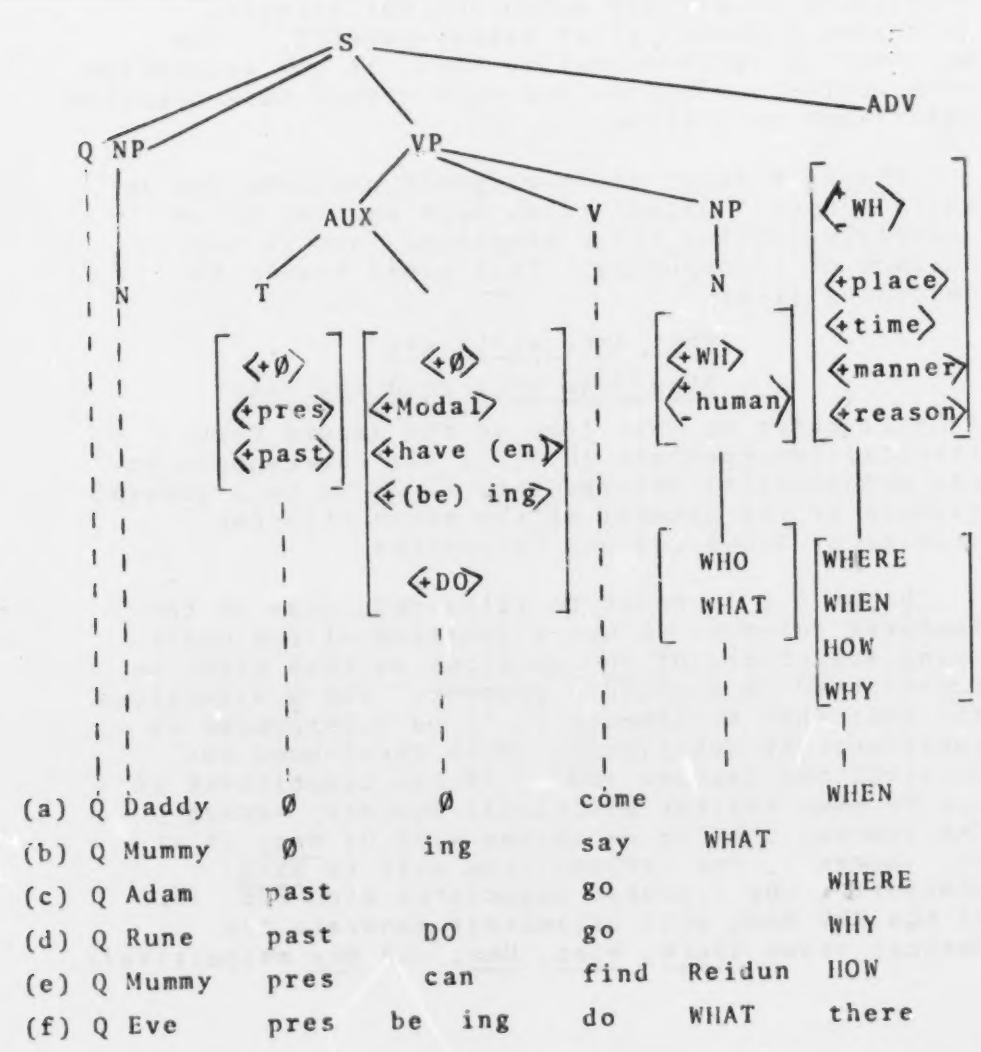
When John will read the book?

I shall refer to this type as the second Hypothetical Intermediate (H.I.2). It corresponds to the Hypothetical Intermediate found to be a general feature of the grammar of the three children studied by Brown and his associates.

Diagram 1 is meant to illustrate some of the features relevant to our discussion of the underlying structures of Wh-questions as they might be represented in a child's grammar. The Q symbolizes the fact that a sentence is to be interpreted as a question; the constituent to be questioned has received the feature +WH . If the constituent at the NP node has the additional feature +human , the lexical item to be chosen will be Who; if it is -human , the lexical item will be What. Similarly, the features associated with the +WH of the ADV node will ultimately generate the lexical items Where, When, How, and Why respectively.

[5] J. J. Katz & P. M. Postal (1964), pp. 108-112, discuss the distinction between ordinary questions and "echo questions" (Brown's "occasional questions") and propose the introduction of an Emphasis Marker in deep structure to account for this difference.

D I A G R A M 1



The diagram has been designed for expository convenience; details have therefore been omitted and notational conventions violated. (a)-(f) exemplify structures underlying the hypothetically intermediate strings (H.I.1) in Table 2.

The rules of the grammar will up to this point generate sentences of the form illustrated by Table 2.

TABLE 2

(a) Daddy come when?
(b) Mummy saying what?
(c) Adam goed where?
(d) Rune did go why?
(e) Mummy can find Reidun how?
(f) Eve are doing what there?

Brown's prediction that sentences of this type would be the first to emerge after the initial pre-transformational stage was not borne out by the result of his analysis of the material. "In fact, that was not the next step - at least not the next step we could see, the next step in performance. Occasional questions never became frequent for the children, and the first ones appeared somewhat later than [Level] III. This may be entirely a matter of grammatical performance, of what the children found "occasion" to say rather than of competence or what they were able to say. As we shall see, the occasions on which these forms are used are special and may simply not have arisen for the child" (1968, p. 284). This explanation seems reasonable, provided the occasional form is a true occasional form with the special supra-segmental features and semantic connotations that Brown implies. Our main hypothesis, however, would predict sentences of the H.I.1 type as the normal interrogative form at one stage of development, but without special stress and intonation features superimposed on them, e.g. such sentences as: You going where, Mummy?, Eve doing what, Adam?, Adam goed where, Daddy?. Presumably no examples of this kind have been found by Brown, which means that neither Brown's hypothesis about occasional questions nor mine about H.I.1 has been confirmed by Brown's study [6].

The story is different for our H.I.2, which is

[6] Nor has it so far been confirmed by the Language Acquisition Research Project at the University of Edinburgh, according to Elisabeth Ingram, "Language development in children" (mimeo).

the string resulting from a preposing transformation. An actualization of this string would change the sentences in Table 2 to those in Table 3.

TABLE 3

(a) When Daddy come?
(b) What Mummy saying?
(c) Where Adam goed?
(d) Why Rune did go?
(e) How Mummy can find Reidun?
(f) What Eve are doing there?

The sentences in Table 3 are not actual sentences from a corpus, but they are - with the possible exception of (d) - plausible children's sentences. All the three children in the study reported by Brown used sentences of the preposing type, so here at least the hypothesis is not disconfirmed.

Own Study [7]

The findings to be described in this survey are based on a preliminary analysis of the emergence of Wh-questions in the speech of two Norwegian children learning English as a second language in a naturalistic setting, i.e., in an English-speaking environment comparable to that of first language learners, with the exception that Norwegian is usually spoken at home.

The two studies have been longitudinal-observational and the corpora consist of tape-recorded interviews and various informal experiments, mainly translation and imitation tests.

My informants have been my son, Rune, and my daughter, Reidun. Rune was 6 1/2 when the study began and he had a rudimentary knowledge of English from a previous stay in Great Britain. The material for this study was collected over a period

[7] My research project is supported in full by the Norwegian Research Council for Science and the Humanities.

of five months, with fairly intensive recordings at 3 - 4 week intervals. For a report based on part of the corpus see Ravem (1968).

My present study is a follow-up of the previous study, but has mainly concentrated on my daughter's acquisition of English. She was three years and nine months old when the study began in September 1968. At that time she had no knowledge of English. Her Norwegian language development has on a subjective impression been normal and average. Her articulation has been exceptionally clear in both languages, which has facilitated transcriptions and made them more reliable[8]. The recordings were made at weekly intervals up to July 1969, each interview averaging one hour.

The interlocutors have been either our eldest, bilingual daughter, my wife and myself, native English-speaking adults, or playmates. The interviews have been arranged without being deliberately structured, as I wanted the speech during the sessions to be as spontaneous as possible. The most rewarding situations with regard to amount of data have been with peers or members of the family. As we were conscious about what we were looking for, we could steer the conversations in different directions and thereby elicit responses of the kind we were interested in. The translation tests have proved a useful instrument for eliciting the types of sentences I wanted, and their validity has been supported by obtained utterances in free conversation.

The collection of material was resumed after a break of two months, when the family were in Norway.

[8] The equipment used has been a Tandberg stereo tape recorder Model 64x with a footswitch rewind-playback control and a Tandberg tape recorder Model 13, which is a cartridge machine for a one channel repeater system. The two can be connected. Further equipment consists of two Tandberg TM 4 microphones and two headphones AKG, K 50 for stereo and mono respectively. Apart from a few recordings on a portable mono tape recorder, all recordings have been stereo recordings, with a tape speed of 7 1/2 i.p.s. The sound has been of a very high quality.

Intensive recordings were made immediately before and after the break, as I was interested in the degree of forgetting that might have occurred during the two months. This, however, is only an incidental aspect of the study. Reidun seemed essentially to have caught up with her agemates by July 1969, but the collection of material has continued since in a less systematic fashion. I have only recently started analyzing the corpus and the present report is based on only a portion of it.

Results and Discussion

There is no prima facie evidence why a child acquiring a second language should go through a similar development as first language learners. Nor incidentally, is it obvious that essentially the same path is followed (the same strategy chosen) by all learners of their mother tongue. Although a comprehensive study, the investigation by Brown and associates is to my knowledge the only complete longitudinal study of interrogative and negative sentences to date, and it comprises only three children. It is therefore quite conceivable that the picture will be more varied as more studies have been undertaken.

Nevertheless, as the actual data in Tables 4 and 5 show there are striking similarities between my own material and data from the study by Brown and associates (Table 6), and it is not likely that this is altogether accidental. (If one set out to search for differences, these would probably be equally striking, but less surprising). I have not yet found any examples corresponding to our H.I.1; nor have I found any of Brown's occasional questions, with their associated stress and intonation contour, in spite of the fact that they are quite frequent in the speech of the interlocutors (my wife and myself).

TABLE 4. Wh-questions from Rune Times 1 - 4

Time 1		What is that?
		What are mean? (what does mean mean)
		Where is that /britʃ/? ("brikke")
		What you eating?
		What he's doing?
		What she is doing?
		What--you going to build tomorrow?
		Where dem drink?
		Why you say that before? (for)
Time 2 (c. 2 wks later)		What Jane give him?
		Rannveig, what dyou doing to-yesterday on school?
		What dyou like?
		(Adult: Say that again clearly)
		'What 'you 'like?
		What you think Pappy--name is?
		What is--Mummy doing not?
	(T)	What you doing to-yesterday?
	(T)	What dyou do to-yesterday?
	(T)	What you going to do tomorrow?
	(T)	What-uh-time-uh-clock Rannveig come back? (when; fut. re.)
	(T)	What you talking to to-yesterday? (who)
Time 3 (3-4 wks later)		What...you knitting?
		What he's doing?
		What is he doing?
		What dyou do the last week before you be--did--"bli"--ill?
	(T)	What dyou reading to-yesterday?
		What you did in Rothbury?
		What dyou did to-yesterday in the hayshed?
		How did you do--have do--you--do--what you do on school last week?
		When dyou went there? (In response to: Ask her when she went there)
		Why the baby crying?
		Why he come for a cup of coffee?
		Why dyou must have table--and chairs?
		Why drink we tea and coffee?
	(T)	Why we not live in Scotland?
	(T)	Why not Mummy make dinner?
Time 4 (c.3 wks later)		What you did after Ranny go to bed? (In response to: Ask Dad what he did?)
		What did you more--that night?
		What did you talk to them? (say/talk about)
	(T)	What do you doing to-yesterday?

(continued)

Table 4 continued

(T) What did you do to-yesterday?
When you go to bed? (past reference)
(T) What do you going to do tomorrow?
(T) Who you talking to to-yesterday?
(T) Why not that go up? (that window)
Why not Mummy make meat today? (from Nor. "mat" = food)

(T) stands for Translation Test.

TABLE 5. Wh-questions from Reidun

Months:weeks of exposure to English	
3:1	What this? (What colour is this)
4:0	Where find it? (in response to: Ask her...where you can find it) Where "jeg kan jeg" find it--apples? (jeg=I; kan=can)
4:4	Whats that? "Hvor er"--my Mummy? (where is)
5:3	Whats her doing? Whats "er" her doing? (er=is/are) Where "er" hers Mummy? Why that the bed "er" broken? (prob.: why (is it) that)
6:0	What that is? Why it--Humpty Dumpty sat on a horse?
6:2	What call that man? What--name that man? Why that man have that on? Whats that--is? Why--uh--him have got like that? (a jacket like that) Why her don't stand there? "Hvem er" that? (who) Whos that? Whos that is? Whosis that is?

(continued)

Table 5 continued

What her going to make? (or: goingto?)
Whats her baking?

6:3 Which one you want?
What you want?
What do you want? (or: doyou)

8:0 Who is that?
Why you can't buy like that shoes?
Where is it, then?
Whats are they?
Why him have got a motor?
Why you can't--why you couldn't take it here?
(i.e. bring)
What I got on?
Why I got that white dress on?
Mummy, where--where was you--are?
Where my penny?

9:3 What they got on they eyes?
What are he doing now, then--that man?
Why isn't that lady in there?
Why can't you touch with your--with your hand?
Which colour have we got, then?
Whats those two man doing?
What they doing?
Why hasn't she--got same as us?

TABLE 6. Wh-questions from the study by R. Brown and associates*

Stage 2
Where my mitten?
Where me sleep?
What the dollie have?
What book name?
Why you smiling?
Why not me sleeping?
Why not...me can't dance?

Stage 3
Where's his other eye?
Where I should put it when I make it up?
Where my spoon goed?
What I did yesterday?
What he can ride in?
What did you doed?
Why the Christmas tree going?

(continued)

Table 6 continued

Why Paul caught it?
Why he don't know how to pretend?
Why kitty can't stand up?
Which way they should go?
How he can be a doctor?
How that opened?
How they can't talk?

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* The examples are taken from E.S.Klima and U.Bellugi (1966). Klima and Bellugi's Stages do not correspond to Brown's Levels. Stage 2 appears to correspond roughly to Level III.

Brown's discussion of the role the occasional form might play in helping the child to see the relationship between different, but equivalent, question forms; the relation of the Wh-word to various pro-forms, such as it and there; and to learn the membership of a constituent, such as NP, is an interesting and plausible attempt to show that there is more in the language data the child is exposed to than meets the ear and that one might profitably look again at what might be exemplified in the input before one jumps to "innateness" conclusions. However, the discussion would appear to be much less relevant to L2 acquisition, where the abstract categories and relationships are already known to the child through his first language. The learning task of my children may have been more of the order of learning how these relations, or whatever, are realized in the second language.

It appears, then, that transformational grammar has captured a stage in the child's development of Wh-questions; but this is not the same as saying that it has captured a psychologically real operation. The latter is what Brown, in effect, assumes. "We believe that these questions, in general, were derived by a single preposing transformation out of underlying strings with dummy elements..." (1968, p.286). The preposing transformation cannot be given a psychological status without at the same time assuming some kind of psychological reality for the underlying string (H.I.1). If this were

not the case, there would be no preposing operation to carry out. It is for the hypothesis unfortunate that no sentences have been obtained that could be said to be either an actualization of the occasional question or of our H.I.1.

While entertaining the hypothesis of a preposing operation, Brown goes on to discuss the evidence for and against it. The Wh-questions in his corpus fall into two classes, one which he calls "Preposing Weak" and another which he calls "Preposing Strong". A general characteristic of children's early speech is the omission of inflections and of minor word classes (functors), which results in what has been referred to as "telegraphic" speech (Brown and Fraser 1963). The class for which the evidence for a preposing transformation is weak consists of children's sentences that could have been learned as a reduction of adult speech to "telegraphese", as shown by the following examples, where the omitted words are in parenthesis:

What (do) you want?

How (will) you open it?

What (is) his name?

The second class of Wh-questions are those for which the evidence for a preposing operation is strong, since they cannot be arrived at by telegraphic reduction. This is the case where the verb is inflected or where the questions include auxiliaries or the verb be, for example:

What he wants?

How he opened it?

What you will want?

Why you can't open it?

What his name is?

Before we consider the validity of the evidence for a preposing operation, it might be profitable to ask why one would want to suggest a hypothesis of this kind in the first place. If I understand Brown correctly, the argument seems to run something like this: The children had prior to Level III produced large numbers of Wh-questions, with all the Wh-words in initial position, but there was reason to believe that the questions were constructions or routines

of some non-transformational type [9]. At Level III, however, there is ample evidence that the Wh-word replaces missing elements in the sentence, both locative adverbials and subject and object noun phrases. The child is capable of responding appropriately to questions calling for different constituents and is also able to produce such questions. "It seems then that the constituents were organized as such and that the children were able to take a Wh word supplied by a parent as the signal to supply an appropriate constituent member." (1968, p. 284).

The child's "knowledge" can thus be accounted for by transformational grammar; but why would one expect to find that this knowledge - for which there is independent evidence - should be demonstrated in the child's language as an actualization of either the occasional question or H.I.1? Brown expected to find it since the occasional question "only requires that the dummy element (which becomes a Wh word) be selected from the constituent and supplied in place" (ibid.). I did not expect to find it, since the child has already for a long time used Wh-words in initial position and since the Wh-word normally appears in the same position in the adult model. What I am uneasy about in Brown's analysis, is that it appears to tie position learning of a fairly simple kind too closely to a much more abstract form of learning complex interrelationships. We can independently establish that the child possesses knowledge of the kind made explicit by transformation grammar and choose to describe it in those terms, and, for example, say that the child "knows" that what in What you want? is the direct object of want and that it is related to an indefinite Pro-form in the declarative sentence You want 'some thing'. It seems to me that it is quite legitimate to assume this knowledge and at the same time propose hypotheses to account for the order of constituents in Wh-questions of the preposing type in the child's speech.

One such hypothesis suggests itself, namely that the Wh-word remains in initial position and is followed by a "nucleus" which retains the word order of a declarative sentence according to the child's grammar at any time.[10]. This hypothesis does not

[9] For a justification of this analysis, see U. Bellugi (1965).

[10] A description in terms of a prefixed NEG or Q

purport to account for more than word order; nor is there more involved, it seems to me, in Brown's class of weak evidence. The evidence for preposing is weak exactly because it allows for an explanation in terms of selective imitation of an adult model and leaves unanswered such questions as how the child is able to question different constituents or can see the relationship between discontinuous constituents, such as the verb and the direct object in What you want?

The Preposing Weak class constitutes weak evidence for preposing only if the "strong" evidence that Brown alleges does exist. If one is willing to concede an alternative explanation which is not in terms of an "underlying grammatical network" for the Preposing Weak class, one should do this also for the class of strong evidence. On the alternative hypothesis (Wh Nucleus) the strong evidence will turn out to be no stronger than the weak evidence; the hypothesis does not, in fact, distinguish between them. Sentences like What he wants? or Why you can't open it? cannot be derived from adult models alone, but the "nucleus" of the sentence (or what remains of it) preserves the word order of the declarative sentence. When the child acquires inflections and auxiliaries in declarative sentences these will also - although usually somewhat later, which may complicate the analysis - be incorporated in Wh-questions as well. This alternative explanation does not affect the hypothesis that the child reduces adult speech in a systematic way and induces general rules on the basis of this reduction; but by adopting reduction as the only criterion, one is forced into setting up a separate class of Preposing Strong evidence, which is not required by the alternative hypothesis.

I like to believe that Tables 4 and 5 show, fairly conclusively, that the intermediate sentence type without transposing (inversion) is a feature also of my informants' acquisition of English as a second language. That they already knew the transposing transformation from Norwegian does not seem to have had much effect. Admittedly, the

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morpheme followed by a Nucleus is used in Klima & Bellugi (1966) for the early stages, but is not proposed as a hypothesis to account for the word order in sentences of the preposing type.

majority of the sentences obtained before inversion became general were of the Preposing Weak type, and hence could have resulted from reduction alone. Even if that were the case, one would have to account for the many clear cases of lack of inversion, such as:

What that is?

What she is doing?

What you did in Rothbury?

Why that man have that on?

A difficulty in deciding whether or not the lack of transposing represents a necessary developmental stage is the fact, which Brown also notes (ibid., p. 285), that by the time the child produces sentences of the Preposing Strong type, he might already have gone a long way to acquiring the adult form with inversion. There are several examples in Table 5 that show how Reidun oscillates between different alternatives, e.g.:

(6:2) "Hvem er" that? (Who is that)

Whos that?

Whos that is?

Whosis that is?

It does not seem unreasonable to expect that my children would have made use of inversion from the beginning by applying the rules for Norwegian. There are isolated examples from both Rune and Reidun where this is in fact the case, e.g.:

Why drink we tea and coffee? (Rune)

Where livd (i.e. live) Catherine and Richard? (Reidun)

but they remain isolated cases. Lack of inversion was a feature of Reidun's Norwegian at an intermediate stage in her development as well, so we seem to have to do with a rather general phenomenon.[11]. Since the use of the auxiliary do is specific to English, I will return to the acquisition of it later; I only want to point out here that there is

[11] The same general similarities have been found in the development of negative sentences between my informants and those of Brown and associates. A brief discussion is included in Ravem (1969).

strong evidence that dyou in Rune's speech, probably throughout Time 3, was a variant of you. The examples with dyou in Table 4 are therefore only apparent counter-examples of transposing.

The Development of the AUX node

Diagram 1 shows that the AUX is the most "crowded" node on our tree. It contains some morphemes that are lexical and others that are realized as inflections, for example, present or past tense, past participle (en), and present participle (ing). There are a number of combinatorial possibilities, some as complicated as, for example:

Past Modal have en be ing

Even without considering the cognitive problems involved in acquiring tense and aspect, the linguistic mechanisms themselves are complicated enough, and it is therefore to be expected that the full range of auxiliary morphemes and their distribution will be late in developing. There is probably room for some individual variation in the order in which children develop the AUX node, but the general picture is from no auxiliary at all through stages of approximations to adult grammar. I have not yet done any detailed analysis of the development of the auxiliary in my children, but it seems to resemble in many important respects the development in first language learners.

The main (or sole) function of do is to be a carrier of tense [12]. The task of the learner of English is to discover this particular function of do. Since the use of do is specific to English, the second language learner is faced with very much the same learning problem. Do has been included in Diagram 1 as a verbal element of AUX, because it shares some of the distributional characteristics of the Modals. We could therefore on this basis predict that Wh-questions at the H.I.2 stage would have the form of sentence (d), Why Rune did go?, in Table 3, namely:

WH NP Tense-DO V

[12] Cf. Katz & Postal (1964), p.8

When do was introduced in affirmative Wh-questions as a tense carrier, Rune used inversion, for example:

What did you do before you get to bed?

With Reidun the situation is not a clear-cut. There is still much material that has not been analyzed, and although most of her affirmative Wh-questions have inversion of do and the subject NP (Table 5, 9:3), the translation tests show isolated examples of transposing, e.g.:

(8:4) Where we did livd for we come here?
(for=before)

I would have tended to interpret the few examples found so far as possible performance mistakes had it no been for Reidun's widespread use of do in declarative sentences, which might suggest a prior (or optional) rule of non-transposing also in Wh-questions with the auxiliary do. Examples are:

(9:1) I did have jelly.

(9:2) My Mummy did make lunch for them.

You did take me, didn't you?

...and she did say 'yes', she did.

We did saw that in the shop.

Nuclear stress is in none of the entries on did, so there is no question of an emphatic form. Menyuk (1969, p.73) gives an example from first language learners of both an affirmative sentence with do and a Wh-question without inversion:

I did read that motor boat book.

Where the wheel do go?

Why and Why not Questions

Although formally identical to other Wh-questions of the preposing type, Brown (1968, pp.286-7) found reason to suspect that Why- and Why not-questions were not derived "by a single preposing transformation out of underlying strings with dummy elements" when they were first introduced by Adam, one of his three informants. Adam's responses did not give evidence that he related his questions to a missing constituent, but rather to his mother's

antecedent declarative, e.g.:

MOTHER	ADAM
I see a seal.	Why Adam see seal?
I don't see anything.	Why not you see anything?
You can't dance.	Why not me can't dance?

The underlying constituent that is questioned in Why (not)- questions is the indefinite proform "for some reason". The answers to such questions are clauses involving causal or teleological explanations introduced by "because" or "in order that". It is therefore not implausible that Why (not)- questions are introduced at a later stage than other question types and that there is no clear relationship between the interrogative word and the questioned constituent in these questions when they first appear in the child's speech. In Adam's case it seem likely that he had some vague notion about causality, but that he is dependent upon an antecedent declarative sentence, which he largely echoes (using his own grammar) and to which he preposes Why or Why not. As for the two other children in the study, they did not start producing Why (not)- questions till they had reached the stage when they could give appropriate answers to them.

This appears, from a survey of parts of my corpus, to have been the case also with Reidun. Early Why- questions did not receive an appropriate response.

RUNE: Why do you put the telephone on the front seat?

(3:2)REIDUN: Yes.

Reidun's acquisition of Why-questions and their appropriate responses cannot in the same way as for first language learners be related to her cognitive development, that is, to "learning what explanation is". She knew this, relative to her age, and had used the Norwegian equivalents for some time.

As Table 7 shows, all Reidun's sentences lack inversion. The first attested occurrences of Why-questions were in the fifth month of exposure to English. One half-hour recording at 6:3 had no less than 27 Why-questions and 8 Why not-questions.

In the same recording there were three "because"-responses and two embedded "because"-clauses. The Why (not)- questions corresponded both to Brown's Preposing Weak and Preposing Strong types. Since Reidun had by now acquired auxiliaries and inflections required by the Preposing Strong class, a large percentage of her sentences were of this type.

TABLE 7. Why (not)- questions from Reidun

	Months:weeks of exposure to English	
	6:2	Why that man have got it? Why uh that horses have that--that on--foot? Why--that man are over there? Why her don't stand there?
	7:2	Why that man take--hang clothes on the--on the boat? Why that go up?
	7:3	Why you can't eat it?
	8:0	Why I sitting there? Why Daddy hold me? Why we can't go to London now--today?
	8:2	Why has him lotsome pockets? Why them have got some--lotsome pockets? Why "de" got those on? Why can't I have it? Why you've got those paper?
(T)	8:4	Why...Rune...isn't here? Why Toto don't cry? Why Andy Pandy don't sleep yet--now? Why Daddy don't "lag" (i.e. make)--eat lunch tomorrow? (i.e. yesterday)
(T)	9:2	Why isn't Rune here? Why doesn't Toto...cry? Why isn't Andy Pandy sleeping? ...Why didn't Daddy--make lunch--yesterday?
	9:2	Why have you got it on? Why must I sit on the floor? Why is it too hot?

The first clear case of inversion in the material so far analyzed occurred at 8:2, viz.,

Why has him lotsome pockets?

which was followed soon after by the non-inverted

Why them have got some--lotsome pockets?

At 8:4 most of the Why (not)- questions in the translation test were of the Preposing Strong type, and none of them had undergone transposing:

Why Toto is in him room?

Why we don't go to Norway?

Why Daddy haven't got hat on?

Why I must bath all - all day? (i.e. every day)

The change took place at about 9:0 months of exposure, possible affecting the copular sentences first. By 9:2 all the entries in the translation test had inversion (but not all Wh-questions):

Why is Toto up his room?

Why don't we go in Norway?

Why haven't Daddy got hat on - his head?

Why must I - bath all day?

Because of the many occurrences of transposing noticed during the interview session a few days later (9:2), some elicited imitation items were added at the end of the session, such as:

FATHER: Why you didn't go to Colchester?
REIDUN: Why didn't you go to Colchester?

FATHER: Why she has got trousers on?
REIDUN: Why have you got trousers on?

FATHER: Why Mummy doesn't sit on the table?
REIDUN: Why doesn't Mummy sit on the table?

It appears, then, that the transposing operation took place over a short period of time and seems to have affected both affirmative and negative Why-questions with different auxiliaries simultaneously.

All Adam's early negative Why-questions were declarative sentences preposed by Why not. The introduction of an initial Why not has tentatively been suggested by Bellugi as a developmental stage in the formation of negative questions, which might in turn have been responsible for the temporary use of double negation by the children, such as, Why

not me can't dance?[13]. As the examples cited from Reidun show, the basis for her negative Why-questions is Why followed by a negative nucleus, and I have found no double negatives at this stage.

Rune, however, produced negative questions of both types, either

Why Nucleus$_{(neg)}$

or

Why not Nucleus

for example:

Why you not come home?

Why not that window go up?

Either type was produced throughout Times 3-5 in a crude translation test, apparently in a random fashion. Although there is little data on Why not-questions from Rune's first stay in Great Britain, there is supporting evidence in the - as yet unanalyzed - data from the beginning of his second stay to suggest that they were alternative patterns. Although the auxiliary do had appeared in Rune's What-questions at Time 4, there were no occurrences of do in the elicited Why not- questions. This might be accidental, or due to the fact that negative questions are more complicated, involving a negative transformation in addition.

Rune's further development could have been based on either of the structures Why Nucleus$_{(neg)}$ or Why not Nucleus, examplified by Why you not like ice-cream? and Why not you like ice-cream?. If the next stage in Rune's development involved the introduction of do without transposing - which would be conceivable, taking the timing of the two operations in Rune's speech into account - we could predict sentences of either or both of the following kind:

(i) Why you don't like ice-cream?

(ii) Why not you don't like ice-cream?

[13] Bellugi (1965), p.119. See also Klima & Bellugi (1966), pp. 203-4 and "The Growth of Transformations" in McNeill (1966), particularly p. 60.

Although there are a few unprocessed tape-recordings from the period between Time 5 (the end of March 1966), when my study was discontinued, and July 1966, when our first stay in Great Britain was terminated, I have no analysis as yet of Rune's speech from that three-month period. However, when preparing my report (1968) in January 1967, I devised some translation test items for Rune in order to find out what had happened to his Why-questions after he had been away from English for half a year. I expected that I would find non-inverted sentences, mainly of type (i) above. As shown by the following examples, this expectation was not borne out:

Why do we not live in Oslo?

Why doesn't we go to Oslo?

Why doesn't Reidun cry?

Why did you not draw that letter to grandma? (i.e. write)

There were a few occurrences of more primitive structures, such as, Why not Ranny come home?, as well as double negatives, the status of which is difficult to ascertain, for example, Why didn't Mummy don't make dinner to-yesterday?. (They could reflect a combination of transposing with a negative nucleus; or they could simply be performance mistakes. No attempt was made at the time to find out.)

These examples show that Rune had by this time acquired both the do-transformation and the transposing transformation. What is not clear is whether he went through a prior stage of using non-inverted sentences with do. In this connection it is interesting - and possible revealing - that most of the negative Why-questions found 1 1/2 years later, at the beginning of Rune's second stay in Great Britain, were in the majority of cases of the structure predicted in 1967, namely, non-transposed sentences with do (in addition to a fair number of more primitive structures):

Why you don't like and going skiing?

Why you don't going to school to-yesterday?

Why Mummy don't play piano now?

It is tempting to speculate that I have accidentally captured an intermediate stage in Rune's development of Why not- questions - a productive rule between the last test in March 1966 and the termination of Rune's first stay in Great Britain in June 1966.

If so, does it suggest that the process of "forgetting" has been the reverse of learning - a regressive process?

Why don't you like ice-cream?

→ Why you don't like ice-cream?

→ Why you not like ice-cream?

Conclusion

The purpose of this paper has been to present some of my findings concerning the development of Wh-questions in two Norwegian children acquiring English as a second language and relate them to those of a similar study of first-language acquisition. The presentation has been somewhat biased in that I have chosen to concentrate on the similarities between first- and second-language learners. Taking the age and maturity levels into consideration and the fact that my children already know one language, the similarities are quite striking and not necessarily what one would expect.

The findings have been discussed in the light of the hypotheses put forward by Brown (1968). Brown has been concerned with confirming or disconfirming a development of Wh-questions in children which reflects the transformational derivations in transformational-generative grammar, in order to find out if these might be said to represent psychologically real operations. Brown is cautious in his interpretation of the evidence and recommends that it might be wise to have a second look at empiricist explanations, as they might still throw light on the process of language acquisition.

Although I think nothing conclusive can be said about the psychological reality of the transformational rules discussed in the paper, the transformational description itself has made it possible to set up testable hypotheses. Whether Brown is right or not in his tentative conclusions is of less importance. At the present stage of inquiry into child language development it is of interest to find out what the regularities are across children with regard to the order of emergence of linguistic structures, irrespective of whether or not the

development can be predicted from linguistic theory. What we need is a more comprehensive language learning theory, which also takes into account general cognitive factors and not only linguistic mechanisms.

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